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Realizing the Right to Sanitation in Deprived Urban Communities: Meeting the Challenges of Collective Action, Coproduction, Affordability, and Housing Tenure

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Summary. — There are serious institutional challenges associated with low-cost sanitation in deprived urban communities. These include a collective action challenge, a coproduction challenge, a challenge of affordability *versus* acceptability, and a challenge related to housing tenure. This paper examines these challenges, revealing both the importance of community-driven sanitation improvement and its difficulties. The nature of the challenges, and the means by which two successful community-driven initiatives have overcome them, suggest that while recognizing the human right to sanitation is important this should not be taken to imply that typical rights-based approaches are the appropriate means of realizing this right.

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Key words — sanitation, urban poverty, coproduction, rights-based, human rights

1. INTRODUCTION

At least rhetorically, sanitation is rising up the agenda of the international development community. Basic sanitation has been recognized as a human right ([United Nations General Assembly, 2010](#)), and universal access is being proposed as a global target for 2030 or thereabouts ([The High-Level Panel of Eminent Persons on the Post-2015 Development Agenda, 2013](#); [WaterAid, 2013](#)). By way of contrast, the target of halving, during 1990–2015, the share of the world's population without access to “improved” sanitation was added somewhat late to the Millennium Development Goals, with only water and not sanitation mentioned in the original Millennium Declaration ([United Nations General Assembly, 2000](#)). Moreover, while official statistics indicate that the world has already met the water target by ensuring that at least 88% of the world's population has access to “improved” water supplies, it is not meeting the sanitation target, although that would only require 75% coverage ([WHO/UNICEF, 2014](#)).

The official statistics ([WHO/UNICEF, 2014](#)) show far higher levels of improved sanitation in urban areas (80% globally in 2012) than in rural areas (47%), but this should not be taken to imply that the sanitation deficiencies in urban areas are small and declining. First, the hazards and squalor associated with unimproved sanitation are particularly acute in urban areas, where residential densities are high. Second, and related to this, since the hazards resulting from poor sanitation have spill-over effects, and do not just put those without adequate facilities at risk, the share of urban households facing serious sanitary problems is far more than this figure of 80% coverage might seem to imply – especially where density and crowding combine with other shelter-deficiencies. Third, there has been especially slow progress in urban areas in recent decades, and the share with improved sanitation has only shifted from 76% to 80% during 1990–2012. Since urban populations have increased considerably, this means that the number of urban dwellers without improved sanitation actually increased from 547 million to 748 million over this period (as compared to a fall from 2,175 million to 1,758 million in rural areas).

There is international agreement that bad sanitation is degrading, disagreeable, unhealthy and far too prevalent, even in urban areas. There is widespread disagreement, however, over what should be done. Moreover, the most heated debates, such as those over whether utility operators should be private or public, are of doubtful relevance to the most severe challenges. Neither privately nor publicly operated utilities are inclined to provide affordable sanitation to those most in need, even in urban areas ([Budds & McGranahan, 2003](#)). Indeed, by focusing attention on technologies (e.g., conventional sewerage systems) and institutional forms (e.g., centralized utilities) that are better suited to providing higher cost sanitation to well-off populations, these debates have inadvertently diverted attention from those most in need.

Conventional sewerage systems operated by utilities rarely reach more than a small share of residents in the cities of low-income countries, with costs difficult to cover even when user payments are supplemented with public subsidies. Thus, while an estimated 72% of Latin American urban households have a sewer connection, as do a large share of China's urban households, in most countries in South and Southeast Asia and Sub-Saharan Africa, the share is less than 10% ([Kjellén, Pensulo, Nordqvist, & Fogde, 2012](#)). With a radical redistribution of power and wealth, it is easy to imagine utilities rolling out high cost sanitations to everyone, but in its absence low-cost alternatives will be necessary if anything like universal provision is to be attained.

Technically, significant improvements can be made using lower cost sanitation systems, such as well-made pit latrines in peri-urban areas, and pour-flush latrines with simple tanks

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(IRC, 2012), or the somewhat higher cost decentralized wastewater treatment systems (Gutterer, Sasse, Panzerbieter, & Reckerzügel, 2009) and condominial sewers (Melo, 2005) in more densely settled areas. However, low-cost provision poses institutional challenges that neither utilities nor private enterprises are equipped to address. It is the integrated piped networks that allow for the centralized and integrated control of water and sanitation systems, which water and sanitation utilities developed with and still aspire to. Low-cost systems are typically based on decentralized on-site facilities, and unlike conventional sewerage systems require users to contribute significantly to their operation and management. Most utilities are poorly prepared to manage these decentralized systems. Alternatively, since sanitation is a quasi-public good, markets do not aggregate individual demands effectively and do not motivate commercial enterprises to supply adequate sanitation.

These institutional difficulties are compounded by the low incomes of the deprived populations, which constrain their economic demand, and by their political weaknesses, which constrain their ability to exert policy pressure on public agencies and utilities. The fact that sanitation problems fall more heavily on women and children than on adult men probably amplify these economic and political hindrances (Tacoli, 2012).

Ideally, better organized residents could overcome some of these institutional deficiencies, and indeed community-led sanitation has also received considerable attention over the years, and has been vigorously promoted in some settlements (Mehta & Movik, 2011). But community-driven sanitary improvement also faces serious challenges in urban settlements, including: (1) The collective action challenge of getting local residents to coordinate and combine their demands for sanitary improvement; (2) The coproduction challenge of getting the state to accept and support community-driven approaches to sanitary improvement, and where necessary to co-invest and take responsibility for the final waste disposal; (3) The challenge of agreeing on improvements when what is affordable is rarely considered acceptable to either the public authorities or the communities; (4) The challenge of ensuring that other poverty-related problems, such as insecure tenure, do not undermine efforts to improve sanitation.

A recent review found that “The framing of water and sanitation as a human right can be understood as an affirmation of the fundamental importance of water and sanitation for human dignity, and as a response to global water service trends that have increasingly emphasized efficiency, financial sustainability, and privatization” (Murthy, 2013). This affirmation is welcome, as is the shift in attention away from narrowly defined economic approaches. On the other hand, the growing focus on rights is part of a more questionable tendency to advocate for “rights-based” approaches (Kindornay, Ron, & Carpenter, 2012). What this means is still debated, although there is now a handbook from the Office of the High Commission on Human Rights on realizing the right to water and sanitation, including a 44 page booklet of checklists (Roaf *et al.*, 2014). Given the nature of the political and institutional challenges to improving sanitation, a narrowly legalistic or formulaic version of a rights-based approach is unlikely to be appropriate. For some one of the attractions of a rights-based approach is that it entails political transformation (Uvin, 2007), but many of the core processes are firmly legalistic and somewhat formulaic. In any case, this paper is less concerned with which approaches to sanitation improvement should be termed rights based, important though that may be, and more concerned with the local political, institutional,

physical and economic obstacles that need to be overcome if the right to sanitation is to be achieved.

The challenges to low-cost sanitation improvement in deprived urban settlements are analyzed in some detail in the pages that follow, focusing on their institutional and economic dimensions and how they can be overcome. The report ends with a section on what these challenges imply for realizing the human right to safe and clean sanitation. The ways in which two well-known community-driven initiatives managed to overcome these challenges are summarized briefly, and shown to contrast significantly with narrowly defined rights-based approaches. However, whether or not they are rights based, they are rights fulfilling, and are consistent with a more broadly conceived and politically sophisticated rights agenda.

2. THE CHALLENGE OF LOCAL COLLECTIVE ACTION

A concern with bad urban sanitation helped to drive the public health movement and changed the way the industrializing cities of the 19th century were governed (Melosi, 2000; Szreter, 2005). It is not surprising that sanitation often lags behind household water provision (WHO/UNICEF, 2014; Winters, Karim, & Martawardaya, 2014). It combines some of our most private behaviors (which people tend not to like even talking about publicly) with some of our most public impacts (which people don’t have the incentives to do much about individually). Sanitary facilities can in principle be convenient, clean, safe, and “private” from a user’s perspective, and still impose a heavy burden on others. According to the WHO/UNICEF monitoring program, an “improved” sanitary facility is “one that hygienically separates human excreta from human contact” (WHO/UNICEF, 2010, p. 34). But the most serious consequences of not separating excreta from human contact arise when people come into contact with the excreta of others, not with their own. Moreover, though largely beyond the scope of this paper, the failure to recycle nutrients in the excreta can have ecological consequences and is inadvertently contributing to global resource scarcities that threaten global sustainability (Cordell, Drangert, & White, 2009).

In those cities where a significant share of sanitary facilities are “unimproved”, an important part of the shared burden is usually local. In deprived urban settlements, it is not uncommon for at least some children to defecate in public spaces such as fields or drains, for fecal material in poor-quality latrines to be accessible to flies, for pit latrines to contaminate groundwater used for drinking or to overflow onto the pathways during the rainy season, for children to play freely and to share facilities, and for infant feces to be disposed of with the solid waste that remains uncollected in piles around the neighborhood. Just a few such hazards create serious health risks in the neighborhood, especially for infants and children. (For a review of urban household and neighborhood hazards in a selection of cities see McGranahan, Jacobi, Songsore, Surjadi, & Kjellén, 2001.)

Households living in such neighborhoods face what amounts to a local public goods problem. Individual households do not have sufficient incentive to invest and act to improve sanitary conditions in the neighborhood because the benefits are shared. In effect, the situation can arise where every household would be better off if they all acted to improve the sanitary conditions, but no individual household has the incentive to improve its own sanitary facilities and behaviors. There may also be important spill-overs between neighborhoods and other parts of the city. Intra-household social and health-related relations, including those of gender,

generation, and home ownership, may also be critically important and extend to house compounds (Songsore & McGranahan, 1998). But at the local scale it is easy to see how there may be a collective demand for improved sanitation that is not converted into behaviors and investments because the benefits any individual receives depend primarily on the actions of others.

A household can act to protect itself by moving to a neighborhood where sanitation conditions are better, or by taking measures to isolate themselves (and particularly infants and children) from their own neighbors. They can build a wall around the house yard, place a household garbage container on the other side of the wall, screen off the kitchen, spray the house regularly to control insects, take children to play and to be educated elsewhere, and have family members come and go from the house in a private vehicle. This is possible for wealthy households who abut low-income informal settlements, but it is not an option most people living in informal settlements can afford. Nor is it an efficient means of addressing the public goods problem.

In economics, the conventional textbook solution to this sort of public goods problem is for the government to provide adequate sanitation at subsidized prices or impose regulations requiring house owners and occupiers to meet certain minimal sanitation standards. In affluent urban settlements this is usually relatively straightforward to organize and agree on politically. However, few governments in low-income countries are willing or able to collect the taxes necessary to subsidize prices to the point where even people living in informal settlements receive acceptable facilities at a price they can afford. The beneficiaries of the services and subsidies are often the “the few relatively well-off people who can understand the system and capture the subsidies” (Mara, Lane, Scott, & Trouba, 2010, p. 3). Governments may be willing to pass regulations that formally require households to achieve high sanitary standards, probably even higher than the low-income residents would collectively choose. All too often, however, the result is a combination of exclusion and the emergence of informal settlements where few regulations are enforced (McGranahan, Mitlin, & Satterthwaite, 2008).

There are less conventional economic textbooks that recognize the potential role of community organizations in such situations (Bowles, 2004). Psychological evidence indicates that people are not self-centered, that they regularly exhibit altruistic behavior, and that this altruism is evoked in collaborative behavior (Tomasello, 2014). Communities can also elicit information and apply incentives unavailable to markets and governments: “Community governance relies on dispersed private information that is often unavailable to states, employers, banks, and other large formal organizations to apply rewards and punishments to members according to their conformity to social norms. In contrast to states and markets, communities effectively foster and utilize the incentives that people have traditionally deployed to regulate their common activity: trust, solidarity, reciprocity, reputation, personal pride, respect, vengeance, and retribution, among others” (Bowles, 2004, p. 490). As a result, “communities solve problems that might otherwise appear as classic market failures or state failures: namely, insufficient provision of local public goods such as neighborhood amenities” (Bowles & Gintis, 2002, p. F422).

The potential for communities to act to address their collective sanitation problems is undoubtedly complicated by the fact that the communities and their sanitation problems are neither well bounded nor congruent. Proximity matters for many sanitation burdens, but so does geography, which combines in turn with technology and custom to influence where

the impacts of poor sanitation fall. A hanging toilet over a stream put one group of people at risk, open defecation on a local open space may impact another group, a poorly constructed and maintained pit latrine another, and fecal matter disposed of along with solid waste yet another. Moreover, the groups exposed to collective risks are unlikely to overlap more than very roughly with the lanes that must organize collectively to put in and manage a condominal sewer, or with the residential neighborhoods that must organize collectively to put up and manage public toilet blocks.

There are also many local factors that can facilitate or inhibit collective action in particular localities, including social, economic, political, and geographically based divisions and conflicts. For example, women often bear most of the labor burden of maintaining household sanitation and hygiene, and if women are underrepresented in government or prevented from organizing collectively within the community, the potential for collective action improving sanitation is likely to be correspondingly reduced. Home ownership patterns and landlord–tenant relations also influence the potential for local collective action, as discussed in more detail below. And there are many more place-specific divisions and conflicts, tied to local politics, cultures, and geographies, which can undermine collective action.

Nevertheless, given the collective nature of the sanitation challenge, it is almost perverse that one of the most popular approaches to improving sanitation systems in low-income areas is called “sanitation marketing” (Devine & Kullmann, 2011). Marketing is traditionally a means of increasing private demands. It is true that low-cost facilities tend to be on site, and the decision to invest in them is typically made by the house occupants or owners. However, as indicated above many of the most critical benefits of these private facilities are public. Even if larger private demands could be created for more sanitary local environments, those with private demands for these public improvements could not secure them merely by investing in their own sanitation facilities and practices.

The popularity of sanitation marketing has probably been given a boost by the prevalence of neoliberal ideas, and the favoring of private sector solutions by many international donors. Support for sanitation marketing also came from research indicating that that people are more likely motivated to upgrade their sanitation facilities because of their convenience, smell, safety, or status, rather than because of health benefits (Jenkins & Sugden, 2006). This last could also be taken, however, to reflect the fact that there is little point in focusing the marketing on benefits of sanitation that are public in character. Sanitation campaigns relying on private action need to focus on private benefits of people’s own private actions, which do not include public health benefits of such actions. Health can be a major, and indeed oppressive, concern among women living in unsanitary low-income settlements, but they may not feel capable to respond individually (Obrist, 2006). When collaborating, collective health is far more likely to be important, in part because collective action does respond to the collective demand. But it is not a suitable target for conventional marketing.

Attempts to market products whose consumption serves the public good is part of a broader trend toward what has come to be termed social marketing (Lefebvre, 2011). Even within the social marketing literature, it has been recognized that an excessive focus on individual behavioral change and a failure to engage with underlying structural problems can produce poor results (Wymer, 2011). And the successes of sanitation marketing do not rely only on targeting individual

demands for sanitation facilities. During a period of rural sanitation marketing in two provinces in Vietnam during 2003–06, 15,000 of 32,000 households targeted gained access to sanitary toilets, increasing access to sanitary toilets in the pilot areas from 15% to 46%. A follow-up study found that the share also increased substantially after the project ended (Sijbesma, Truong, & Devine, 2010, p. iii). However, the program involved a wide range of activities, on both the supply and demand sides, including developing more affordable sanitation technologies, training masons, producers, and small shopkeepers to produce, market, and deliver these models and, working with village heads, community health workers and Women's Union members to promote them (Devine & Sijbesma, 2011). What characterized the approach was not an emphasis on applying commercial marketing, but on upgrading the supply side by working with the private producers of sanitary services, and upgrading the demand side by working with various people active at the community level (Sijbesma *et al.*, 2010).

Even more revealing, a simplified guide to sanitation marketing suggests that at the low-cost end, sanitation marketing is equivalent to community-led total sanitation (CLTS) (Water and Sanitation Program, 2012, p. 4), which is another very popular approach to promoting sanitation improvements, particularly in rural areas. However, the roots of CLTS lie in participatory research, which is in some respects as far removed from commercial marketing as one can get (Kar, 2008; Mehta & Movik, 2011). CLTS is an overtly community-based approach, and involves very much the sorts of actions that might be expected to overcome the collective action problems associated with neighborhood sanitation, at least in rural settings where place-based communities are relatively strong. Kamal Kar, credited with starting the CLTS movement, places collective action at the center of CLTS. Indeed, he suggests that the benefits of CLTS lie not just in the sanitary improvements themselves, and that “more importantly it builds the collective strength and self-confidence of the communities to move ahead with many other local initiatives” (Kar, 2011).

To simplify, pursuing CLTS within a community involves four steps: (1) Collecting local evidence on sanitary conditions and the location of feces in particular, building on the knowledge of community members (including children); (2) Examining that evidence publicly, in a manner designed to “ignite” collective disgust with the ingestion of fecal matter implied by existing conditions; (3) Building on that disgust to reach a collective agreement on replacing all open defecation with the use of affordable toilets; (4) Creating adherence to that agreement through the traditional means by which close communities regulate themselves, ranging from pride and shame, to gossip and revelation, and eventually to retribution. These are very much the sort of activities that could be expected to, at least temporarily, create collective demand and action for sanitation improvement.

CLTS has many adherents and spread rapidly through Bangladesh and parts of India, and on to upward of 40 other countries around the world (Mehta & Movik, 2011). Kamal Kar estimates that about 20 million people have benefited since CLTS started in 2000 (Kar, 2011), and is very sanguine about its potential in Africa, where needs are high but conditions very different (Kar & Milward, 2011). There have undoubtedly been exaggerated claims. However, some of the statistics cited as evidence of the failings of CLTS, such as that “only” 39% of the CLTS villages examined in some studies actually go on to become open defecation free (Mara *et al.*, 2010, p. 4), could also be read as very positive results.

Creating a community-wide agreement on sanitary improvement in most urban neighborhoods may require more organization than CLTS can provide, however. CLTS has not taken off in urban areas as it has in rural (Kar, 2011, p. xiii). This is not surprising. In urban areas there is more need for infrastructural investment as opposed to just behavioral change, and households cannot be expected to build the toilets themselves without any assistance, owing to the higher cost and greater skills required to build urban sanitation facilities, the relative scarcity of land and difficulties securing relevant permissions.

The principal lesson from CLTS is that community cooperation can, in the right circumstances, radically increase the effective demand for sanitation at the community-scale. Similar lessons may apply to some of the other successful approaches reported, such as the use of Community Health Clubs in rural Zimbabwe, one of whose principles has been to influence people in a coordinated group so that changes were approved by group decision rather than expecting each individual to take personal decisions (Waterkeyn & Cairncross, 2005). This is likely to apply to urban as well as rural areas, even if the means of tapping that demand may need to be different.

There is also a significant urban literature on the important role of community-based organizations in addressing the shelter needs of low-income urban dwellers, including but extending beyond improved sanitation (Satterthwaite & Mitlin, 2014). Some of the better documented examples of urban successes have involved networked community organizations (often rooted in savings groups), supported by non-governmental organizations that provide technical support but not organizational or political leadership. The extent to which other forms of local organization and leadership facilitate sanitary improvement has not been systematically addressed, though anecdotal evidence suggests that communities often cooperate to address their sanitation problems, but with difficulty.

3. THE CHALLENGE OF COPRODUCTION

In a path-breaking article, Nobel Prize-winning economist Elinor Ostrom argued that the sharp conceptual divide between government and civil society is a trap, hiding the potential synergies that can be gained from co-producing goods and services (Ostrom, 1996). Defining coproduction as “a process through which inputs from individuals who are not “in” the same organization are transformed into goods and services”, she presented case studies of coproduction from Brazil and Nigeria, concluding that “co-production of many goods and services normally considered to be public goods by government agencies and citizens organized into polycentric systems is crucial for achieving higher levels of welfare in developing countries, particularly for those who are poor” (Ostrom, 1996, p. 1083).

Sanitation provided the basis for one of the case studies Ostrom presented and continues to be prominent in a more recent work on coproduction (Mitlin, 2008). There are many reasons why sanitary improvements are often best co-produced, particularly in informal urban settlements. Some of the reasons are related to the sorts of incentive problems and competencies involved in collective action at different scales (community and city). But most important from the perspective of advocates of coproduction, by co-producing sanitation residents of informal settlements should be able to secure better services from their governments, and in return

public agencies should be able to secure more public spirited behavior from some of their worst-off citizens.

In terms of incentive problems, communities are comparatively well situated to address sanitation's neighborhood collective action problems, but public utilities are far better situated to deal with dealing with the collective action problem posed by fecal sludge management (Peal, Evans, Blackett, Hawkins, & Heymans, 2014), when it requires the treatment and disposal of the waste outside of the community. Thus the importance of coproduction for sanitation is related to the way the collective action problems of low-cost sanitation typically play out, with communities needing to take a lead in supporting intra-community collective action, and larger public sector actors needing to address the extra-community collective action challenge.

In terms of relative competencies, community residents, organizations, and local enterprises have a comparative advantage in constructing and managing simple low-cost systems situated within the community, while public agencies, utilities, and large contractors have a comparative advantage in constructing and managing technologically sophisticated systems centered outside of the community. This will tend to reinforce the division of responsibilities suggested by the incentive problems.

Condominial sewers, Ostrom's Brazilian example (Ostrom, 1996), provide an example of a relatively high-end sanitation system that can still be made affordable in quite low-income areas, provided it is coproduced. The condominial sewers are smaller in diameter than conventional sewers, are laid less deep, cost a third to half that of conventional sewerage and can become cheaper than on-site systems as density increases past about 150–200 people per hectare (Mara, 2012). "Whereas conventional systems essentially provide services to each housing unit, condominial systems deliver services to each housing block or any group of dwellings that could be termed a neighborhood unit or 'condominium'." (Melo, 2005). The condominial system drains to a point for treatment, removal, or connection with a trunk sewer.

Even within Brazil, the elected neighborhood associations formed to initiate the condominial sewers in different areas have played a range of different roles, functioning variously as advocates, service providers, and organizers of collective action (Watson, 1995). The original justification for engaging with local residents, and getting their cooperation, was primarily to keep costs down, to allow the residents to play a role in designing the local system, and perhaps most important to provide the capacity and responsibility for dealing with the blockages that often arise with small diameter sewers. In Brasilia alone, the condominial system has been used to extend sewer connections to half a million people (Melo, 2005), and it has also been deployed in a number of other cities.

The toilet block for shared or public use is a low-end sanitary facility that also works best when co-produced. Often, public toilet blocks, or sometimes community toilet blocks restricted to local residents, are built in low-income neighborhoods by public agencies. It is common to see such toilet blocks overflowing, broken down, used for other purposes (e.g., for storage) or otherwise failing to fulfill their purpose. Because of the difficulties often encountered with public and shared toilets, in the monitoring of progress toward the global sanitation target for 2015 such toilets are defined as unimproved (though there are suggestions to allow as improved toilets shared among a small number of households who know each other (WHO/UNICEF, 2014)).

There have been some notable successes with shared and toilet blocks, however, even in India where their frequent

failure has also been well documented (Sanan & Moulik, 2007). Successes have tended to come when either users (Burra, Patel, & Kerr, 2003; McGranahan, 2013) or sanitation workers (Pathak, 2011) have organized collectively and co-produced the sanitation systems, with these organizations taking primary responsibility for the operations of the facility and government agencies taking responsibility for having the human waste removed and disposed of or recycled safely.

In the examples of both successful condominial sewer systems and toilet blocks, community or worker involvement has also helped to change the politics and policies of sanitary provision at higher scales. Ostrom's discussion of the condominial systems makes explicit the link between the collective action challenge and the coproduction challenge, and also relates it to social capital: "the condominial system depends on three difficult challenges: (i) the organization of citizens and their fulfillment of promises to undertake collective action (what Tandler (1995) refers to as social capital *outside the government*), (ii) good teamwork within a public agency (what Tandler calls social capital *within the government*), and (iii) effective coordination between citizens" (Ostrom, 1996, p. 1075). As Watson argues, when it is working well: "the condominial system activates residents by engaging them during project implementation, when service level, layout, maintenance arrangements, and cost recovery mechanisms are negotiated. This fosters an active, vocal constituency that puts in motion the accountability mechanisms needed for good agency performance" (Watson, 1995, p. 49).

Alternatively, in relation to the shared toilet blocks Appadurai (2001) describes a co-operative representing women's savings groups using community-designed toilets to "negotiate support and changed policies" and to further "deep democracy" (these savings groups are part of the Alliance also mentioned in the final section of this article). In this case, the state provides financial and technical support. Such examples indicate that coproduction is not just as a practical means of overcoming management problems, but can potentially become the means of radically transforming the politics of practice (Albrechts, 2013). Equally, as some of the more ambitious reflections on urban governance have highlighted, there is considerable political potential in organizing around collective goods such as sanitation (Gandy, 2006).

With the wide array of technologies and institutional and economic settings, there is an enormous range of different co-productive arrangements possible, and evidence suggests that the arrangements matter. Even with the relatively standardized condominial system, Nance and Ortolano (2007) distinguish between having communities participate in mobilizing, decision-making, construction, and maintenance. They examined these different forms of participation when comparing three condominial sewer systems in Recife and four in Natal. Participation in mobilizing and decision-making was associated with better performance, while participation in construction and maintenance was not. Such results suggest that successful coproduction may require dialogic as well as practical collaboration.

While the political advantages of coproduction attract the most attention, some sanitation experts more concerned with the technical obstacles to extending sanitation in informal settlements have also advocated what amounts to coproduction. Mara and Alabaster (2008) argue that provision should be based on having service providers work with groups of residents, and that these groups should be required to cooperate to manage their sanitation blocks, on-site sanitation systems, or condominial sewers. In effect, they make the practical case for coproduction, even in the absence of dialogic collaboration.

Coproduction can be a political and a technical challenge, whether the initiative is coming from the public sector, from the community, or from some third party. Social capital is often scarce within the public sectors of low-income countries, and also within informal settlements. Achieving effective cooperation between public and community organizations is a tall order. However, the advantage that Ostrom ascribes to coproduction is precisely that it helps to create social capital, and can improve relations between public service users and their governments. This would be particularly beneficial where residents often see the authorities as a threat and authorities see residents as a nuisance or worse.

4. THE CHALLENGE OF AFFORDABILITY VERSUS ACCEPTABILITY

In simple terms, a sanitation system is affordable to an individual or institution if they have the necessary financial or other resources with which to acquire it, and do not have higher priority uses for these resources. People on unacceptably low incomes cannot be expected to afford acceptable sanitation any more than they can afford acceptable clothing, food, and other commodities. Unfortunately for people living in poverty, regulations are often designed as if acceptable sanitation were affordable by definition. In practice, sanitation considered acceptable by authorities is not only unaffordable individually, but even collectively (i.e., even if the local public good problem could be overcome). Moreover, publicly funded sanitation providers often face their own affordability challenges, with mandated prices and coverage targets that are inconsistent with their revenues. And civil society organizations also face affordability challenges, promoting sanitary solutions that are too expensive to realistically scale up.

More specifically, three common manifestations of the challenge of affordability conflicting with acceptability are:

- When sanitation standards for private sanitation facilities are being set, they are often set so high that a significant share of the population could not afford to meet them, even if they overcame their local collective action challenges. This can lead to the exclusion of low-income residents from areas where sanitary regulations are strictly enforced, and contribute to the creation of informal settlements that do not conform to official guidelines and regulations.¹
- When sanitation is provided through utilities, with prices and coverage levels set by the public sector, it is common for prices to be set at levels that would require subsidies larger than the public agencies involved can afford. The typical result is for coverage targets to be sacrificed, particularly in informal and low-income settlements, and the limited subsidies to go to the relatively well-off.
- In pilot or demonstration projects, meant to provide the basis for scaling up private or partially subsidized sanitation provision, the sanitation technologies piloted often cost so much that only relatively well-off residents can afford them once the subsidy built into the pilot project is no longer available. Partly as a result, they have little chance of being replicated, though they may establish a precedent that later sanitation improvement programs are expected to adhere to.

Before examining the basis for such affordability problems, it is worth noting that overcoming the collective action and coproduction challenges described above can make sanitary improvements at least seem more affordable. Collective action

can make sanitary improvement more affordable in that individuals can achieve more benefits from the same contribution if others are contributing in tandem. Coproduction can also make sanitary improvement more affordable, both by reducing costs and at least potentially by shifting some of the financial burden to those better able to afford it. More generally, to the extent that collective action and coproduction lead to more equitable decision-making this could make sanitation more affordable to those most in need. This applies to collective decision-making within governments, within communities and importantly also within households. Thus, for example, if women had a greater say in household budget allocations, one might expect more priority to be given to sanitary improvements, and particularly those that favor women and children.

The reasons that sanitation standards often fail to benefit those most in need derives from the nature of standards and the ways in which even standards applied equally can have inequitable consequences. In principle, and ignoring differences between and among households, the collective action problem posed by sanitation can be addressed by requiring households and house owners to maintain certain minimum standards, so that sanitation deficiencies do not impose undue burdens on others. Ideally, such standards are clearly affordable, in the sense that every household is better off when all households make the sacrifices necessary to meet the standard. However, in some cities and neighborhoods there is evidence of strict standards being used successfully to exclude low-income migrants (Feler & Henderson, 2011).

It is difficult to know how common it is for high standards to receive support because of their exclusionary tendencies, but there is little doubt that high sanitary standards can work against deprived households. Women in disadvantaged households have been particularly prone to harassment through high sanitary standards (though for other women these same standards may have been liberating). In her socioeconomic history of women and class in Accra, Robertson (1984, p. 34) notes that: "The sanitary inspectors became the personification of the colonial government for many residents of Central Accra. In some years hundreds and even thousands of women were prosecuted for having standing water or filth in their compounds. So many women came up before the District Court for sanitary offenses that the routine "he" referring to the accused in the court records was eventually changed to a routine "she". Such overt targeting of low-income women is not as acceptable within government as it was in the colonial period, but the tendency has been not so much to lower the official standards, or find more affordable means of achieving the same levels of sanitation, but to reduce their enforcement.

In principle, standards negotiated collectively in low-income settlements, but supported by local authorities, could provide a means of securing more affordable sanitation facilities. There has been some experimentation along these lines with housing standards in Sri Lanka (Jayaratne & Sohail, 2005). However, neither residents nor their governments have much incentive to advocate standards that officially accept facilities neither side believes to be truly adequate, even if they are better than what is available. Moreover, international actors and donors are reluctant to accept standards that could be taken to condone unsafe or degrading sanitation facilities. Indeed, recognition of sanitation as a human right could be taken to preclude prioritizing affordability over acceptability. Locally, the compromise of maintaining high standards but not enforcing them tends to reinforce informality, which characterizes many other dimensions of low-income urban settlements.

Again in principle, subsidies could be used to enable low-income households to achieve sanitation standards that would otherwise be unaffordable. Unfortunately, countries where coverage is low typically also have low tax revenues and little capacity or willingness to provide large subsidies (which are currently out of favor with international development agencies as well). Informality, in its various forms, can be one of the reasons for low tax revenues and also for low spend, as the residents of informal settlements can be politically somewhat weakened or in the extreme even disenfranchised by this informality. Underfunded but price-controlled utilities will typically only be able to serve a small share of the population, particularly with expensive technologies such as sewers and sewer connections. Under such conditions, high standards can easily divert the limited subsidies available to the middle-class households. The compromise between a large subsidy that can make the sanitation services affordable to all and removing subsidies altogether has often been small subsidies that attract the well-off but leave a significant share of the population unserved. This is often treated as an inherent outcome of subsidizing water and sanitation services, and has helped to give subsidies a bad name in the water and sanitation sector. This is a misleading simplification, however, particularly given that the root of the problem is that the pricing policy is not matched by the level of subsidy needed to support it. This is as much a political as an economic problem, and there is a clear contradiction between recognizing sanitation as a human right and refusing on principle to subsidize its provision to those who cannot afford it.

International and local NGOs sometimes play a significant role in improving sanitation in low-income settlements, and they too have found it difficult to identify sanitation facilities that are both acceptable and affordable. Most advocates of CLTS have gone explicitly against this tendency by focusing on the elimination of open defecation rather than the provision of a specific alternative. Many NGO initiatives are also providing public or shared facilities in which sanitation is accessed by several families. This has undoubtedly helped to make them more affordable and replicable. For more conventional sanitation projects, however, there are likely to be strong pressures to prioritize improvements that meet some minimum standard over improvements that have the potential to reach everyone in need. Indeed, this is implicit in the Millennium Development Goal target of halving the share of the population without access to basic sanitation during 1990–2015 – this can be achieved without improving conditions at all for other half of those without access to “improved” sanitation, including any who will continue to share facilities.

More generally, a pilot sanitation project set up by an NGO will be treated as a failure by funders and experts and users if the facilities are not considered to be of acceptable quality, at least while the project is still operational. Cost will also be a concern, but the tendency will be to try to achieve a high enough standard at the least cost, rather than to achieve an affordable improvement of the highest quality. This is especially the case if official regulations or international guidelines are influencing the choice of technology. As externally funded projects try to expand coverage beyond the pilot scale, they may well face pressure to demonstrate that large numbers of households can be reached. Ironically, this can push coverage toward the somewhat better off areas where people can afford the improvements with smaller subsidies.

There are a number of quite conventional measures, other than subsidies and choosing low-cost technologies, that can make sanitary improvements more affordable. Savings

groups and loans with reasonably low interest rates can help households secure the finances needed to make lumpy payments, such as for latrine construction. Training for artisans can help to reduce the cost of constructing latrines or other facilities. Efforts to improve production technology or secure returns to scale in sanitation facilities can reduce costs on the supply side. As already indicated, measures that give women more control over expenditures, including sanitation, as well as making the decision to improve sanitary conditions more collective, would be likely to increase the amount that households would be willing to pay for sanitation. Taken together, such changes could make a large difference. In practical terms, however, identifying and agreeing on affordable sanitation options is almost inevitably a serious challenge, and one that is compounded by the considerable uncertainty surrounding the benefits of sanitation (Whittington, Jeuland, Barker, & Yuen, 2012).

5. THE CHALLENGE OF ENSURING THAT TENURE AND RELATED ISSUES DO NOT UNDERMINE THE INCENTIVE TO IMPROVE SANITATION

Even utility-provided piped services can be undermined by tenure problems. For example, utilities and local authorities may not be allowed to provide sanitation and water services to settlements considered to be unauthorized (Murthy, 2012). In other cases, they are not under any obligation to do so, at least until the settlement has been recognized by the government. This can apply to privately as well as publically operated utilities. During the wave of privatizations initiated in the 1990s, the French water company Suez Lyonnaise des Eaux prepared a manual on “Alternative solutions for water supply and sanitation in areas with limited financial resources”, explicitly warning against supplying settlements lacking tenure (Suez Lyonnaise des Eaux, 1998).

It is also often claimed that tenure problems can reduce a household's incentive to improve their own home, and by implication their incentives to invest in a sanitary toilet. After all, if you may be evicted soon, why invest in a costly toilet? Actually, the possible effects on residents' and homeowners' incentives, and on the collective incentives of the residents, are far more complicated than this suggests, and some of these complications hinge on the difference between investing in sanitary facilities (that will be lost in the event of a forced departure) and adopting sanitary behaviors (which have immediate benefits). The threat of eviction undermines the incentive to invest in sanitary improvement, but not the incentive to engage in sanitary behavior. Insecure rental tenure, on the other hand, undermines the investment incentive for the people occupying the home, but may increase it for the landlord, at least if they can extract higher rents. On the other hand, when improvements can be expected to increase the security of potential owner occupiers, by increasing the legitimacy of the settlement, the tenure insecure may have even more incentive to invest in improvements than normal owner occupiers (Robinson, 2005).

Rental tenure can not only lead to sanitation problems because of poor landlord–tenant relations, but also because even collectively tenants have little incentive to improve neighborhood sanitation conditions if the landlords are going to be able to capture the benefits through higher rents. In simple economic terms, “A residential tenant's maintenance of the property and civic actions to enhance the quality of the

neighborhood environment contribute to the value of the owner's property, but cannot be specified in an enforceable contract. Thus, tenants have little incentive to maintain the property and to participate in enhancing local amenities" (Bowles, 2012, p. 36). Issues of coproduction combine with collective action problems here, since part of the problem is that good neighborhood sanitation is coproduced by residents and landlords, but if landlords are free to increase rents to a rate set by the market, they will be able to extract all of the benefits. This is part of a broader set of issues involving struggles with landlords (or structure owners in the case of informal settlements where land ownership is not clear), which can easily undermine efforts to upgrade low-income settlements and benefit their low-income residents (Rigon, 2014).

In addition to these more narrowly defined tenure problems, there are many other social, political, and other institutional factors that can interfere with sanitary improvement, and are especially prevalent in informal settlements. The collective organizations that do exist may actively interfere with collective efficacy in addressing sanitation problems. Thus, for example, in the absence of rule of law, gangs making money from trading in illegal drugs or other illegal merchandise may emerge. These gangs are likely to undermine other forms of organization within the community, particularly organizations led by men, which are likely to be perceived as a threat to the gang. The gangs themselves may serve some social functions, but are unlikely to be an appropriate organizational form for sanitary improvement.

Political parties may engage in local organizing, but this is often for the purposes of competing for support within the community, which is again rarely an appropriate organizational form for sanitary improvement (thus, for example, the local Committees for the Defense of the Revolution organized local urban sanitation in 1980s Ghana, but political conflicts undermined their continued operation (Osumanu, Abdul-Rahim, Songsore, Braimah, & Mulenga, 2010, p. 8)). This form of political organizing can interfere with local collective action, and so too can the sort of political brokering done informally to gain political support through distributing benefits. Research on low-income urban areas in Argentina has shown the often corrosive effects of political brokers who "direct flows of goods, information and services from their political patrons to their clients and flows of political support (in the form of attendance at rallies, participation in party activities, and sometimes votes) from their clients to their patrons" (Auyero, 2007). Such political brokerage can easily undermine attempts to develop collective decision-making on local environmental problems (Almansi *et al.*, 2011), but being unofficial is difficult to challenge formally. Even when local politicians are successfully pressured to invest in public goods and may secure sanitation improvements, but problems of maintenance are commonplace.

These physical and institutional conditions are closely intertwined with poverty, in its various guises (e.g., low incomes, ill-health, lack of education, social exclusion, legal discrimination, political disempowerment). They are extremely difficult to address systematically and are well beyond the scope of a project or program designed to improve sanitary facilities. Often they are tacitly understood locally, but not well articulated in any formal arenas. The resulting importance of local knowledge and context provides one of the conventional justifications for taking a participatory approach to sanitary improvement, and also to integrated approaches to sanitary provision that address other aspects of poverty including both additional services and political employment (Ali & Stevens, 2009).

6. OVERCOMING THE CHALLENGES AND REALIZING THE HUMAN RIGHT TO SANITATION

Given the institutional challenges low-cost sanitation systems pose, it should not be surprising that sanitation provision is lagging behind water provision and other developmental targets. Hopefully, recognizing safe and clean sanitation as a human right (United Nations General Assembly, 2010) will help to overcome these challenges. As noted at the start of this article however, there are divergent views on how human rights should be pursued (Cornwall & Nyamu-Musembi, 2004; Miller, 2010; O'Leary, 2014), and reasons to believe that the more legalistic strategies are ill-suited to addressing urban sanitation deficiencies in low-income areas.

The focus of much human rights discourse on empowering disadvantaged groups and holding authorities accountable resonates with the challenges of fostering local collective action and coproduction. The political and institutional obstacles to improving sanitation in deprived urban settlements justify the special attention implied by identifying sanitation as a human right. On the other hand, these same challenges can make it very difficult to rely on rights-based claims to demand improvements to sanitation from the state. Indeed, the best known community-led efforts to improve sanitation in deprived urban areas have addressed the challenges using approaches very much at odd with those rights-based approaches that put protests, court battles and making demands on the state front and center (Mitlin & Patel, 2009).

Within the international water and sanitation sector, there has been a tendency to interpret the rights to water and sanitation through legal lenses, and to argue, for example, that "a rights-based approach to water and sanitation offers international legal standards by which to assess obligations, shifting the consideration of rights from moral responsibility to legal accountability" (Meier *et al.*, 2014). It is relatively easy to envisage how such a narrow rights-based approach could be used to support the connection of low-income households to expanding urban sewer networks. The utilities that operate these networks may be difficult to manage, particularly in the absence of sufficient funding and a supportive regulatory environment. But the state can be made accountable for driving their expansion. A narrowly rights-based approach could advocate for progressive coverage targets with clearly specified technologies and tariffs, leading toward universal coverage as rapidly as can reasonably be expected. Utilities, their regulators, and perhaps even their actual and potential funders (including international donors) could in principle be held accountable should the targets not be met.

It is more difficult to see how a narrow rights-based approach to sanitation can be pursued through lower cost sanitation systems developed in a bottom-up fashion, and overcoming the challenges of local collective action, coproduction, affordability, and tenure security. Each of the challenges complicates the pursuit of sanitation as a human right in a somewhat different way, particularly when that right is interpreted narrowly. A bottom-up approach would gain more support if the right to sanitation were interpreted as an integral part of a broader human rights agenda, to be pursued not only through "justiciable" remedies but through various other forms of social counter power, negotiation of relations between communities and the state, and political struggle (Uvin, 2007, pp. 603–604 and others have argued that this should be considered an integral part of the human rights agenda).

Interpreting the right to sanitation narrowly, the collective character of the local sanitation challenges pose awkward

questions concerning, for example, whose rights are not being realized when an individual or household faces unsanitary conditions because of the sanitary facilities of others – those who face the unpleasantness and risks, those who lack the facilities, or both? On the other hand, interpreting human rights as justifying remedies involving social organization and struggle, the collective action challenge could be taken to justify local organization to achieve the right to sanitation. This interpretation also has a legal dimension, but of broader scope than the right to sanitation *per se*, and it is more supportive of efforts to meet the collective challenges that sanitation poses.

That good low-cost sanitation needs to be co-produced also poses awkward questions for a narrow approach to the right to sanitation, such as who is to be held to account when needed coproduction by a utility and a community does not take place – uncooperative community members, the utility, its regulators and funders, or perhaps all of these? An interpretation more supportive of social struggle and negotiation would be that effective and equitable coproduction involves precisely the sort of redefinition of relations between citizens and the state that a rights-based approach should support.

For the affordability challenge a narrow rights-based approach raises unhelpful questions about whether and if so when prioritizing affordability over acceptability can be justified. A more politically sophisticated interpretation would be that a rights-based approach demands that the contradiction between affordability and acceptability becomes part of the platform for pursuing the sort of higher level structural changes that will ensure that what is affordable is acceptable. Under such an interpretation, even if affordability must take precedence in certain arenas, this does not make the outcome acceptable. It could be argued that this interpretation is implicit in the demand for the “progressive realization” of human rights (Office of the United Nations High Commission for Human Rights, 2008).

Finally, the extent to which tenure issues undermine sanitation improvement awkward questions about a rights-based approach that focusses narrowly on sanitation. Here, a broader socio-political interpretation would be that governments are violating their obligations to respect the human right to water and sanitation when they refuse to allow sanitation services to be extended to neighborhoods because of tenure issues (Murthy, 2012), and that the right to sanitation also calls into question the legitimacy of tenure systems that undermine access.

The challenges can also be examined in terms of how successful efforts to improve sanitation have managed to overcome them. Two of the most successful and sustained attempts to upgrade sanitation in and with deprived urban communities are those of the Orangi Pilot Project (hereafter OPP) in Karachi and the Alliance of Mahila Milan, SPARC and the Indian National Federation of Slum Dwellers in Pune and Mumbai (hereafter the Alliance). Both have been well documented (Appadurai, 2001; Burra *et al.*, 2003; Hasan, 2010; McGranahan, 2013; Patel *et al.*, 2014, manuscript in preparation; Pervaiz, Rahman, & Hasan, 2008). Although based in different countries and involving quite different technologies, both eschewed the approach of making rights-based claims for the government to provide conventional sanitation solutions. Instead they developed alternative approaches, initially resisted and treated as overly political, but eventually endorsed and coproduced by the local public sector sanitation providers. Table 1 summarizes in simplified terms how these successful community-driven approaches have managed to overcome each of the challenges.

In terms of the collective action challenge, both of the initiatives involved concerted attempts to organize community members in such a way that their demands could be articulated and acted on collectively. The “component-sharing model” of the OPP, for example, makes the lane, with around 20–40 households, the informal unit responsible for building and maintaining the sewer going down their lane (Pervaiz *et al.*, 2008, p. 59). Community toilet blocks were favored by the Alliance in Mumbai and Pune in part because they provided a good basis for community organizing.

Both of the initiatives took advantage of both the practical suitability and the strategic potential of co-producing sanitary improvement, and used coproduction to secure more public support for locally driven sanitary improvement. In Karachi the division between “internal” and “external” infrastructure, with lane residents responsible for the former and the public provider for the latter, is central to the model of collaboration. Over time the OPP approach has become part of the mainstream and is reflected in the national sanitation plans, which rely on a significant level of coproduction. In Mumbai and Pune, the choice of sanitation was related to coproduction from the start, with the public sector typically responsible for the final waste disposal and usually for capital costs, but with community organizations also co-producing both the sanitary facilities and playing a lead role in their

Table 1. *Summary of the institutional challenges of improving sanitation in deprived urban neighborhoods and related responses of two successful grassroots initiatives*

Institutional challenges	Response of successful grassroots initiatives
1. <i>The collective action challenge:</i> Bad local sanitation is a collective problem that people in deprived neighborhoods cannot be expected to confront individually	Responses were rooted in community organization, and the collective nature of problems became part of the justification for collective action
2. <i>The coproduction challenge:</i> Even well-organized communities cannot take responsibility for what happens to human waste once out of the neighborhood, while the public sector and its utilities are rarely able and willing to provide and maintain sanitation facilities in informal settlements	Improvements were co-produced by coordinated measures on the part of both community residents and the official utility, both addressing the technical challenge and making the utility more responsive to community needs
3. <i>The challenge of affordability versus acceptability:</i> Technological ‘solutions’ that governments and the residents of informal settlements can agree are acceptable, they also find to be unaffordable, and vice versa	Conventional solutions meeting all official standards and community aspirations were rejected in favor of affordable solutions that come as close as possible to being acceptable
4. <i>The tenure challenge:</i> Local urban sanitary and water deficiencies are amplified by poverty-related problems, including most notably tenure issues, that cannot be addressed from within a narrow water and sanitation agenda	Sanitary and water improvements were embedded in a broader poverty agenda, extending to issues of tenure security

management. Again, the approach came to influence city and eventually national approaches to urban sanitation improvement.

Both of the OPP and the Alliance privileged affordability over meeting conventional sanitation guidelines, and used technologies considered to be sub-standard within the formal water and sanitation establishment. The OPP relied on working with a simplified sewer system, and already in the early 1980s identified as a key obstacle the *economic* barrier of not being able to afford to cover the costs of conventional sanitation facilities (Pervaiz *et al.*, 2008). In Mumbai and Pune the success of the Alliance centered on working to improve the design and management of communal toilets (Burra *et al.*, 2003), although most international experts in the water and sanitation sector have been inclined to treat all communal toilets as inadequate (as demonstrated by the decision by the UNICEF/WHO Joint Monitoring Program to exclude households using shared toilets from estimates of households with “improved” sanitation (WHO/UNICEF, 2014)).

Both OPP and the Alliance started out with agendas far broader than the water and sanitation sector. Their work on sanitation emerged from lengthy dialogs within low-income communities. Both sets of institutions also work on a range of other shelter issues, including those related to land tenure, and draw heavily on the knowledge and experience developed in the course of this other work. And in both cases there are good reasons to believe that if sanitation ceased to be a local priority, it would also cease to be a priority for OPP and the Alliance.

A companion article to this one is planned, and will include a more detailed analysis of how these two community-driven sanitation initiatives managed to meet the challenges, scale up, and influence city-wide and national sanitation programs. For the purposes of this article, it is worth observing that while neither used the language of human rights, and both implicitly distanced themselves from narrowly “rights-based” approaches, they could both be said to represent a more locally grounded and politically pragmatic approach to realizing the right to sanitation.

NOTES

1. The criteria used by the WHO/UNICEF Joint Monitoring Program to distinguish “improved” from “unimproved” sanitation (WHO/UNICEF, 2014, p. 40) treat as improved unshared facilities based on: flush/pour toilets draining to a tank or sewer, ventilated improved pit latrines, pit latrines with a slab or composting toilets. This distinction is not presented as a standard or even a guideline (the term used to refer to WHO advice intended to be useful to countries developing standards), but as the basis

for monitoring progress toward the Millennium Development Goal sanitation target. Official standards adopted for use by utilities and government agencies are likely to be influenced by such indicator criteria, but can be considerably more demanding. CLTS, on the other hand, does not rely on technical standards to determine what sorts of toilet facilities should be promoted, drawing considerable criticism from some technical experts.

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